Docket No. 8733.464.00-US
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Dong Hoon LEE et al.	Customer No. 30827
Application No. 09/901,079	Confirmation No. 7082
Filed: July 10, 2001	Art Unit: 2871
For: IN-PLANE SWITCHING LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR FABRICATING THE SAME	Examiner: Timothy L. Rude

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APPEAL BRIEF

Sir:

In response to a Final Rejection of all pending claims that was mailed on June 27, 2006, and in support of a Notice of Appeal filed September 25, 2006, Appellants hereby submit this Appeal Brief.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefore are dealt with in the accompanying transmittal.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37(c):

I. Real Party in Interest

II. Related Appeals and Interferences

III. Status of Claims

IV. Status of Amendments

V. Summary of Claimed Subject Matter

VI. Grounds of Rejection to be Reviewed on Appeal

VII. Argument

Claims Appendix

Evidence Appendix

Related Proceedings Appendix

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is: LG.PHILIPS LCD CO., LTD.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Total Number of Claims in the Application

There are 28 claims pending in the application.

Current Status of Claims

Claims canceled: claims 11–14, 25–28.

Claims withdrawn from consideration but not canceled: None.

Claims pending: 1–10, 15–24, and 29–36.

Claims allowed: None.

Claims rejected: 1–10, 15–24, and 29–36.

Claims on Appeal: The claims on appeal are claims 1–10, 15–24, and 29–36.

IV. STATUS OF AMENDMENTS

The Examiner issued a Final Rejection on June 27, 2006. No amendment has been filed in response to this Final Rejection. Accordingly, the claims enclosed herein in the Claims Appendix reflect the current status of claims 1–10, 15–24, and 29–36.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following description of the claimed invention relates to independent claims 1, 16, and 30. The present invention is directed to an in-plane switching-mode liquid crystal display device (hereinafter "IPS-LCD") having an improved aperture ratio. The IPS-PCD includes a first substrate 1 and a second substrate. (See FIGs. 9A–9E and 10A–10D, illustrating first substrate 1). A gate line 100 is arranged in one direction on the first substrate 1, and a common line 120 is arranged on the first substrate 1. (See FIG. 8; page 11, lines 22–25). A gate insulation layer 132 is disposed on the first substrate. (See FIG. 9A and 10A; page 13, lines 9–10). A data line 200/201 is disposed on the gate insulation layer 132. (See FIGs. 8, 9B and 10B; page 11, line 24, to page 12, line 1). A first passivation layer 136 is disposed on the gate insulation layer 132. (See FIGs. 9C and 10C; page 13, line 24, to page 14, line 2). A plurality of common electrodes 130 are in contact with the first passivation layer 136. (See FIGs. 8, 9C, and 10C; page 12, lines 11–16). A second passivation layer 137 is disposed on the first passivation layer 136, wherein the second passivation layer 137 is an inorganic material. (See FIGs. 9D and 10D; page 14, lines 15–17). A plurality of pixel electrodes 300 is disposed on the second passivation layer 137, wherein each of the plurality of common electrodes 130 and plurality of pixel electrodes 300 are parallel to and spaced apart from each other. (See FIG. 9E; page 14, line 21, to page 15, line 4). A liquid crystal layer is disposed between the first substrate 1 and the second substrate. The gate insulation layer 132 and the first passivation layer 136 include a plurality of common line contact holes 131. (See FIGs. 8 and 10C; page 12, lines 11–14, and page 14, lines 13–14). The first passivation layer 136 and the second passivation layer 137 include a drain contact hole 240 exposing a drain electrode 220. (See FIG. 9D; page 14, lines 15–20). One of the plurality of pixel electrodes 300 is electrically connected to the drain electrode 220 through the drain contact hole 240. (See FIG. 9E; page 14, line 21, to page 15, line

2). Each common electrode 130 is electrically connected with the common line 120 through a corresponding common line contact hole 131. (See FIG. 10D; page 12, lines 11–15).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The Examiner rejected claims 1, 7–10, 15–16, 24, and 29 under 35 U.S.C. § 103(a) as being unpatentable over Applicant's Related Art (hereinafter "ARA") in view of U.S. Patent No. 6,507,382 to Sakamoto et al. (hereinafter "Sakamoto") and U.S. Patent No. 5,581,382 to Kim (hereinafter "Kim"). The Examiner rejected claims 2–3 and 17–20 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of U.S. Patent No. 6,356,328 B1 to Shin et al. (hereinafter "Shin"). The Examiner rejected claims 4 and 23 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of U.S. Patent No. 6,163,355 to Chang et al. (hereinafter "Chang"). The Examiner rejected claims 5–6 and 21–22 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of U.S. Patent No. 6,414,729 B1 to Akiyama et al. (hereinafter "Akiyama"). The Examiner rejected claims 30 and 31 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of U.S. Patent No. 6,300,995 B1 to Wakagi et al. (hereinafter "Wakagi"). The Examiner rejected claims 32 and 33 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto, Kim, and Wakagi, and further in view of Shin. The Examiner rejected claim 34 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto, Kim, and Wakagi, and further in view of Chang. The Examiner rejected claims 35 and 36 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto, Kim, and Wakagi, and further in view of Akiyama.

VII. ARGUMENT

A. The Examiner improperly rejected claims 1, 7–10, 15–16, 24, and 29 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim.

Applicants respectfully assert that the rejection of independent claim 1 stated by the Examiner does not satisfy the burden of establishing *prima facie* obviousness under 35 U.S.C. § 103(a). (MPEP 2142).

The Examiner stated the following in rejecting claim 1.

> "Sakamoto is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation ***to move the plurality of common electrodes of APA to be on and in contact with the passivation layer*** with contact holes in the Applicants' first passivation layer, second passivation layer, and any insulating protection film, as needed ***to connect a plurality of common electrodes to the common line of APA***; a second passivation layer on the first passivation layer; and a pixel electrode on the second passivation layer ***to allow for easy manufacture of a color display that prevents color unevenness for better display performance***." (Office Action, pages 4–5, *emphasis added*).

Applicants respectfully assert that the Examiner has not established *prima facie* obviousness, for three reasons: first, the Examiner does not offer a valid suggestion or motivation to combine ARA and Sakamoto; second, there is no reasonable expectation of success in combining ARA and Sakamoto; and third, ARA and Sakamoto, alone or in combination, do not teach all of the elements of claim 1.

First, the Examiner did not offer a valid suggestion or motivation to combine ARA and Sakamoto. "There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." (MPEP 706.02(j), MPEP 2143.01). Applicants respectfully submit that there is no suggestion or motivation, in ARA or Sakamoto, to combine these teachings because the proposed modification would render the combination unsatisfactory for its intended purpose. (MPEP 2143.01(V)).

The Examiner's proposed modification of ARA to include the teaching of Sakamoto would render the combination unsatisfactory for its intended purpose because the combination would result in severe reduction in aperture ratio. As mentioned above, the present invention is

directed to an IPS-LCD having an improved aperture ratio. ARA teaches opaque common electrodes, whereas Sakamoto teaches using the common electrode as a shield to cover the color filter. The common electrode in ARA is made of a "metal layer," such as "Aluminum (Al), Chrome (Cr), Molybdenum (Mo) or Tungsten (W)." (Page 5, lines 18–19). These materials are opaque. Therefore, the common electrode in ARA, is opaque. (Page 6, lines 19–20). In contrast, Sakamoto teaches a transparent common electrode that should cover as much of the color filter as possible for the purpose of shielding: "the common electrode covers at least 75% of the color filter area and at least 90% of the electrode-pair region (the region surrounded by the pixel electrode)." (Column 8, lines 50–52). Covering at least 75% of the color filter (Sakamoto) with an opaque common electrode (ARA) would block the light through the color filter, greatly exacerbating the poor aperture ratio attributed to ARA. Accordingly, Applicants respectfully submit that the modification proposed by the Examiner would render the combination unsatisfactory for its intended purpose, which is the improvement of aperture ratio.

Further, Applicants respectfully disagree with the Examiner's stated motivations to combine ARA and Sakamoto. The Examiner stated that the motive in combining ARA and Sakamoto is "to allow for easy manufacture of a color display." (Office Action, page 4). The Examiner offers no evidence to support the conclusion that the proposed combination of ARA and Sakamoto (above) eases manufacture. For instance, Sakamoto says nothing about ease of manufacture. Further, Applicants submit that combining ARA and Sakamoto, as suggested by the Examiner, would not ease the manufacturing of ARA. For example, in ARA, the common electrode is already connected to the common line: "a first metal layer is deposited on a substrate 1 and then patterned to form the gate lines 51 and 51, the gate electrode 52, the common line 54 and the plurality of common electrodes" (Page 5, lines 18–19). It would not ease manufacture, as the Examiner suggests, "to move the plurality of common electrodes of APA to be on and in contact with the passivation layer" because ARA teaches the common electrodes and the common line already formed on the same layer. Accordingly, there is nothing in the express teachings of ARA and Sakamoto to suggest or provide motivation to combine the teachings.

Additionally, Applicants submit there is no implicit suggestion or motivation in either ARA or Sakamoto to combine these teachings. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and ***the nature of the problem to be solved as a whole*** would have suggested to those of ordinary skill in the art." (MPEP 2143.01(I), *emphasis added*). Applicants respectfully submit that ARA and Sakamoto address completely different problems. The problem addressed by Sakamoto is color filter degradation from exposure to electric fields: "an intense electric field due to scanning and/or signal lines may cause significant charging-up or charging of the color filter, and the electric field may be inadequately absorbed by the electrodes and leak into the liquid crystal layer." (Column 3, lines 46–52). Further, "an electric field ... affects a color filter, leading to deterioration." (Column 3, lines 3–5). In contrast, the nature of the problem of ARA involves poor aperture ratio and high power consumption. Regarding aperture ratio, "the aperture ratio is poor because the common and pixel electrodes are formed of the opaque metal." (page 6, lines 19–20). Regarding high power consumption, "the aperture ratio is closely related to the brightness ... the stronger the brightness is, the more powerful the backlight device is ... For these reasons (ARA) has high power consumption." (Page 7, lines 12–14). Accordingly, ARA and Sakamoto involve completely different problems. As such, there is no implicit suggestion or motivation to combine ARA and Sakamoto.

Second, there is no reasonable expectation of success in combining ARA and Sakamoto. There is no reasonable expectation of success because, as discussed above ARA teaches opaque common electrodes, and Sakamoto teaches using the common electrode as a shield to cover the color filter. As discussed above, covering at least 75% of the color filter (Sakamoto) with an opaque common electrode (ARA) would block the light through the color filter, greatly exacerbating the poor aperture ratio attributed to ARA. Accordingly, Applicants respectfully submit that there is no reasonable expectation of success in combining ARA and Sakamoto.

Third, ARA and Sakamoto, alone or in combination, do not teach all of the elements of claim 1. In particular, neither ARA nor Sakamoto, alone or in combination, teaches or suggests "wherein each common electrode is electrically connected with the common line through a corresponding common line contact hole." The common electrode (ref. 3) electrically

floats and is not connected to a common electrode line. Accordingly, Applicants respectfully submit that ARA and Sakamoto do not teach all of the elements of claim 1.

Based upon the above remarks, Applicants respectfully assert that the Examiner has not established a *prima facie* case of obviousness in support of a rejection under 35 U.S.C. § 103(a).

Applicants note the Examiner states that "in considering a reference, it is proper to take into account not only the specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." (Office Action, p. 4, *citing* MPEP 2144.01). Applicants respectfully assert that one of ordinary skill would not draw any inference that might suggest combining ARA and Sakamoto. MPEP 2144.01 cites two cases involving implicit disclosure. The first, *In re Preda*, 401 F.2d 825, 826, 150 USPQ 342, 344 (CCPA 1968), involves the teaching of a single reference. The second, *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPE 1976), involves two references that, when combined disclosed broader chemical types than that claimed.[1] Although the claimed type allegedly has unexpected benefits, it was implicitly within the chemical classes taught in the combined references.[2] Neither *In re Preda* nor *In re Lamberti* speak to the facts of the present application. For example, neither of these cases involves two references that, when combined, yield a combination that is unsatisfactory for its intended purpose, and in which there is no expectation of success. As such, Applicants respectfully submit that, given the factual backgrounds of *In re Preda* and *In re Lamberti*, implicit disclosure, as defined in MPEP 2144.01, does not apply here. Accordingly, one skilled in the art would not be reasonably expected to draw any inferences from the combined teachings of ARA and Sakamoto.

The Examiner further cites Kim as teaching "wherein the second passivation layer is an inorganic material." Applicants respectfully submit that Kim fails to cure the deficiency of ARA and Sakamoto to teach or suggest all of the elements of claim 1, and that the discussion regarding the teaching of Kim is moot. Additionally, Applicants note Kim is not directed to an in-plane

[1] "Appellants argue that neither of the prior art references suggests the use of asymmetric dialkyl moieties, because the disclosures of both references are broad, asymmetric dialkyl compounds are neither expressly disclosed nor exemplified, and the preferred embodiment is a symmetric dialkyl sulfonium chloride. However, as noted previously, the disclosure in the prior art of 'at least one methylene group attached to the sulfur atom' would suggest the asymmetric aspect of the claimed invention." *Id.* at 750, 280.

switching (IPS) type device. As such, Applicants submit that the mere fact that a particular material may be suitable in a non-IPS device does not necessarily make the material suitable for an IPS device.

Accordingly, Applicants respectfully submit that claim 1, and its dependent claims 7–10, and 15, are allowable over any combination of ARA, Sakamoto, and Kim.

Applicants respectfully traverse the rejection of independent claim 16 and request reconsideration. The Examiner rejects claim 16, stating that "the steps of manufacturing comprising forming would have been obvious given the structure above." Applicants respectfully submit that claim 16, and its dependent claims 24 and 29, are allowable for the same or similar reasons as those regarding claim 1 above.A copy of the claims involved in the present appeal is attached hereto as Appendix A.

B. The Examiner improperly rejected claims 30 and 31 under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of Wakagi.

In the Office Action, claims 30 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of Wakagi. Applicants respectfully traverse the rejection of independent claim 30 and request reconsideration. As discussed above with regard to claim 1, the Examiner has not established a *prima facie* case of obviousness using the combined teachings of ARA, Sakamoto, and Kim. Further, Wakagi fails to cure the deficiency of ARA, Sakamoto, and Kim to teach or suggest "a plurality of common electrodes in contact with the second insulation layer, wherein the common electrodes contact the common line via the first contact holes; a third insulation layer on the common electrodes and the second insulation layer, wherein the third insulation layer is an inorganic material; a second contact hole through the second and third insulation layers over a drain electrode of the thin film transistor," and "a plurality of pixel electrodes on the third insulation layer, wherein one of the plurality of pixel electrodes is electrically connected to the drain electrode through the second contact hole." Nothing in ARA, Sakamoto, and Kim, alone or in combination, teaches or suggests at least these features of the claimed invention.

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[2] The court stated "the fact that a specific symmetric dialkyl is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered." *Id.* at 750, 280.

Also, the Examiner states that the motivation to combine Wakagi with ARA, Sakamoto, and Kim is "to reduce losses in the driving voltage applied to the liquid crystal, by providing an active matrix substrate in which degradation of the metal electrode is prevented in a liquid crystal display device." (Office Action, pp. 13–14). This motivation contradicts the objective of Sakamoto, in which "the shield or common electrode [is] between the color filter and the liquid crystal layer, which may reduce effects of accumulated charge in the color filter layer." As such, Wakagi teaches preventing electric field degradation of the metal electrode, whereas Sakamoto teaches using the electrode as a shield to protect the color filter. These two objectives are contradictory.

Therefore, based on these contradictory objectives, there is no motivation to combine the teachings of Wakagi with those of ARA, Sakamoto, and Kim. Accordingly, Applicants respectfully submit that claim 30, and its dependent claim 31, are allowable over any combination of ARA, Sakamoto, Kim, and Wakagi.

C. The remaining dependent claims are allowable due to the fact that they depend from allowable independent claims.

In the Office Action, claims 2–3 and 17–20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of Shin. Applicants respectfully traverse the rejection of claim 2–3 and request reconsideration. Claims 2–3, which depend from independent claim 1, are allowable because Shin fails to cure the deficiency of ARA, Sakamoto, and Kim to teach or suggest all the features of independent claim 1 as discussed above. Accordingly, Applicants respectfully submit that claims 2–3, as they depend from independent claim 1, are allowable over any combination of ARA, Sakamoto, Kim, and Shin.

Applicants respectfully traverse the rejection of claims 17–20 and request reconsideration. Claims 17–20, which depend from independent claim 16, are allowable because Shin fails to cure the deficiency of ARA, Sakamoto, and Kim to teach or suggest all the features of independent claim 16 as discussed above. Accordingly, Applicants respectfully submit that claims 17–20, as they depend from independent claim 16, are allowable over any combination of ARA, Sakamoto, Kim, and Shin.

In the Office Action, claims 4 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of Chang. Applicants respectfully traverse the rejection of claim 4 and request reconsideration. Applicants note the Examiner has stated the motivation for modifying the "APA in view of Sakamoto and Kim with SiNx of Chang as an art recognized material suitable for the intended purpose of forming a passivation layer." Applicants disagree with this basis of rejection and request evidentiary documents to support this basis for alleged motivation. Claim 4, which depends from independent claim 1, is allowable because Chang fails to cure the deficiency of ARA, Sakamoto, and Kim to teach or suggest all the features of independent claim 1 as discussed above. Accordingly, Applicants respectfully submit that claim 4, as it depends from independent claim 1, is allowable over any combination of ARA, Sakamoto, Kim, and Chang.

Applicants respectfully traverse the rejection of claim 23 and request reconsideration. Claim 23, which depends from independent claim 16, is allowable because Chang fails to cure the deficiency of ARA, Sakamoto, and Kim to teach or suggest all the features of independent claim 16 as discussed above. Accordingly, Applicants respectfully submit that claim 23, as it depends from independent claim 16, is allowable over any combination of ARA, Sakamoto, Kim, and Chang.

In the Office Action, claims 5–6 and 21–22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto and Kim, and further in view of Akiyama. Applicants respectfully traverse the rejection of claims 5–6 and request reconsideration. Claims 5–6, which depend from independent claim 1, are allowable because Akiyama fails to cure the deficiency of ARA, Sakamoto, and Kim to teach or suggest all of the features of independent claim 1 as discussed above. Further, Applicants respectfully assert that the Examiner does not provide a valid motivation to combine the teaching of Akiyama with those of ARA, Sakamoto, and Kim. The Examiner states that "Akiyama is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use BCB for the insulation layers to shield the liquid crystal layers from the scanning and signal lines." (Office Action, p. 12). Applicants respectfully submit that Akiyama does not provide such a suggestion.

Akiyama states that "[t]he insulating film-1 and the insulating film-2 may be an organic resin made of, for example, BCB, or a non-photosensitive resin, an inorganic insulating film, such as a silicon oxide film, or a silicon nitride film ... To reduce the degree of coupling, it is preferable that the insulating film-1 and the insulating film-2 have a large degree of thickness." (Col. 9, ll. 59–65). Akiyama does not teach any advantage to using an organic resin instead of an inorganic insulating film. Accordingly, for at least these reasons, Applicants respectfully submit that claims 5–6, as they depend from independent claim 1, are allowable over any combination of ARA, Sakamoto, Kim, and Akiyama.

Applicants respectfully traverse the rejection of claims 21–22 and request reconsideration. Claims 21–22, which depend from independent claim 16, are allowable because Akiyama fails to cure the deficiency of ARA, Sakamoto, and Kim to teach or suggest all of the features of independent claim 16 as discussed above. Further, for the same reason as stated regarding claims 5–6 above, Applicants respectfully assert that there is no motivation to combine Akiyama with ARA, Sakamoto, and Kim. Accordingly, Applicants respectfully submit that claims 21–22, as they depend from independent claim 16, are allowable over any combination of ARA, Sakamoto, Kim, and Akiyama.

In the Office Action, claims 32 and 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ARA, Sakamoto, Kim, and Wakagi, and further in view of Shin. Applicants respectfully traverse the rejection of claims 32 and 33 and request reconsideration. Claims 32 and 33, which depend from independent claim 30, are allowable because Shin fails to cure the deficiency of ARA, Sakamoto, Kim, and Wakagi, as discussed with regard to claim 30 above. Accordingly, Applicants respectfully submit that claims 32 and 33, as they depend from independent claim 30, are allowable over any combination of ARA, Sakamoto, Kim, Wakagi, and Shin.

In the Office Action, claim 34 is rejected under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto, Kim, and Wakagi, and further in view of Chang. Applicants respectfully traverse the rejection of claim 34 and request reconsideration. Claim 25, which depends from independent claim 30, is allowable in that Chang fails to cure the deficiency of ARA, Sakamoto, Kim, and Wakagi, as discussed above with regard to claim 30 above.

Accordingly, Applicants respectfully submit that claim 34, as it depends from independent claim 30, is allowable over any combination of ARA, Sakamoto, Kim, Wakagi, and Chang.

In the Office Action, claims 35 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ARA in view of Sakamoto, Kim, and Wakagi, and further in view of Akiyama. Applicants respectfully traverse the rejection of claims 35 and 36 and request reconsideration. Claims 35 and 36, which depend from independent claim 30, are allowable because Akiyama fails to cure the deficiency of ARA, Sakamoto, Kim, and Wakagi, as discussed with regard to claim 30 above. Accordingly, Applicants respectfully submit that claims 35 and 36, as they depend from independent claim 30, are allowable over any combination of ARA, Sakamoto, Kim, Wakagi, and Akiyama.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. § 1.136, and any additional fees required under 37 C.F.R. § 1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

Dated: December 21, 2006

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CLAIM APPENDIX

Claims Involved In The Appeal Of Application No. 09/901,079:

1. (Previously Presented) An in-plane switching liquid crystal display device comprising:

first and second substrates;

a gate line arranged in one direction on the first substrate;

a common line arranged on the first substrate;

a gate insulation layer on the first substrate;

a data line on the gate insulation layer;

a first passivation layer on the gate insulation layer;

a plurality of common electrodes in contact with the first passivation layer;

a second passivation layer on the first passivation layer, wherein the second passivation layer is an inorganic material;

a plurality of pixel electrodes on the second passivation layer, wherein the plurality of common electrodes and plurality of pixel electrodes are parallel to and spaced apart from each other; and

a liquid crystal layer between the first and second substrates,

wherein the gate insulation layer and the first passivation layer include a plurality of common line contact holes,

wherein the first passivation layer and the second passivation layer include a drain contact hole exposing a drain electrode,

wherein one of the plurality of pixel electrodes is electrically connected to the drain electrode through the drain contact hole, and

wherein each common electrode is electrically connected with the common line through a corresponding common line contact hole.

2. (Previously Presented) The device of claim 1, wherein the common and pixel electrodes are formed of a transparent conductive material.

3. (Original) The device of claim 2, wherein the transparent conductive material includes at least one of indium tin oxide (ITO) or indium zinc oxide (IZO).

4. (Original) The device of claim 1, wherein the gate insulation layer and the second passivation layer are one of Silicon Nitride (SiN_X) and Silicon Oxide (SiO_2).

5. (Original) The device of claim 1, wherein the first passivation layer is formed of an organic material.

6. (Original) The device of claim 5, wherein the organic material is one of benzocyclobutene (BCB) and acryl.

7. (Original) The device of claim 1, wherein the common line is parallel with the gate line and spaced apart from the gate line.

8. (Original) The device of claim 1, wherein the data line is perpendicular to the gate line.

9. (Previously Presented) The device of claim 1, further comprising a thin film transistor at a crossing point of the gate line and the data line.

10. (Original) The device of claim 9, wherein the thin film transistor includes a gate electrode, an active layer, and source and drain electrodes.

15. (Original) The device of claim 1, wherein each pixel electrode is arranged between the adjacent common electrodes.

16. (Previously Presented) A method of fabricating an array substrate for an in-plane switching liquid crystal device, the method comprising:

forming a gate electrode, a gate line and a common line on a substrate with a first metal layer;

forming a gate insulation layer on the substrate;

forming a data line and source and drain electrodes with a second metal layer;

forming a first passivation layer on the gate insulation layer;

forming a plurality of common electrodes in contact with the first passivation layer;

forming a second passivation layer on the first passivation layer, wherein the second passivation layer is an inorganic material; and

forming a plurality of pixel electrodes on the second passivation layer,

wherein forming the gate insulation layer and the first passivation layer includes forming a plurality of common line contact holes,

wherein a drain contact hole that exposes a drain electrode is formed in the first and second passivation layers,

wherein one of the plurality of pixel electrodes is formed to electrically connect to the drain electrode through the drain contact hole, and

wherein each of the plurality of common electrodes is electrically connected with the common line through each common line contact hole.

17. (Original) The method of claim 16, wherein the step of forming the plurality of common electrodes comprises depositing and patterning a first transparent conductive material.

18. (Original) The method of claim 17, wherein the first transparent conductive material is one of indium tin oxide (ITO) and indium zinc oxide (IZO).

19. (Original) The method of claim 16, wherein the step of forming the pixel electrodes comprises depositing and patterning a second transparent conductive material.

20. (Original) The method of claim 19, wherein the second transparent conductive material is one of indium tin oxide (ITO) and indium zinc oxide (IZO).

21. (Original) The method of claim 16, wherein the first passivation layer is an organic material.

22. (Original) The method of claim 21, wherein the organic material is one of benzocyclobutene (BCB) and acryl.

23. (Original) The method of claim 16, wherein the gate insulation layer and the second passivation layer are one of Silicon Nitride (SiN_X) and Silicon Oxide (SiO_2).

24. (Original) The method of claim 16, wherein the first and second metal layer include a material selected from a group consisting of chromium (Cr), aluminum (Al), aluminum alloy (Al alloy), molybdenum (Mo), tantalum (Ta), tungsten (W), antimony (Sb), and an alloy thereof.

29. (Original) The method of claim 16, wherein each pixel electrode is arranged between adjacent common electrodes.

30. (Previously Presented) An in-plane switching liquid crystal display device, comprising:

first and second substrates;

gate lines on the first substrate;

data lines perpendicular to the gate lines to form a plurality of pixel regions;

a thin film transistor in each of the pixel regions at a crossing point of the data lines and the gate lines;

a common line on the first substrate in each of the pixel regions, the common line parallel to the gate lines;

a first insulation layer over the gate lines, the data lines being on the first insulation layer;

a second insulation layer over the data lines and the common line;

a plurality of first contact holes through the first and second insulation layers over the common line;

a plurality of common electrodes in contact with the second insulation layer, wherein the common electrodes contact the common line via the first contact holes;

a third insulation layer on the common electrodes and the second insulation layer, wherein the third insulation layer is an inorganic material;

a second contact hole through the second and third insulation layers over a drain electrode of the thin film transistor;

a plurality of pixel electrodes on the third insulation layer, wherein one of the plurality of pixel electrodes is electrically connected to the drain electrode through the second contact hole; and

a liquid crystal interposed between the first and second substrates.

31. (Original) The device of claim 30, wherein the pixel electrodes electrically communicate with one another via a transverse pixel electrode perpendicular to the common electrodes.

32. (Original) The device of claim 30, wherein the pixel electrodes and the common electrodes are formed of a transparent conductive material.

33. (Original) The device of claim 30, wherein the transparent conductive material is one of indium tin oxide and indium zinc oxide.

34. (Original) The device of claim 30, wherein the first and third insulation layers are formed of one of Silicon Nitride (SiNx) and Silicon Oxide.

35. (Original) The device of claim 30, wherein the second insulation layer is formed of an organic material.

36. (Original) The device of claim 35, wherein the organic material is one of benzocyclobutene (BCB) and acryl.

EVIDENCE APPENDIX

Evidence:

None.

RELATED PROCEEDINGS APPENDIX

Related Proceedings:

None.